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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/618,648	07/18/2000	Joseph E. Geusic	303.382US2	1734

21186 7590 05/23/2003

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. BOX 2938
MINNEAPOLIS, MN 55402

EXAMINER

LOUIE, WAI SING

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 05/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/618,648

Applicant(s)

GEUSIC ET AL.

Examiner

Wai-Sing Louie

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 91-127 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 91-99 is/are allowed.
- 6) ☒ Claim(s) 100-127 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 19.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claims 91-99 are allowed in the previous office action. Claims 100-101 are rejected based on that they are written in functional language, which does not carry any patentable weight.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 102-127 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of U.S. Patent No. 6,198,168 in view of U.S. Patent No. 6,090,636.

With regard to claims 102, 106, 115, 122, and 124, US 6,198,168 discloses an integrated circuit comprising:

- At least one functional circuit formed on a wafer (claim 1), but does not disclose the functional circuit is a memory circuit. However, it is very common in the art to have a memory circuit connected to the wafer such as disclosed in US 6,090,636 (col. 1, lines 21-28). Therefore, it would have been obvious to have a memory circuit formed on the wafer;
- At least one optical waveguide formed in a high aspect ratio hole that extends through the wafer (claim 1);
- A layer of aluminum formed by sputtering to line the inner surface of the high aspect ratio hole (claim 23). Aluminum is a highly reflective material.

With regard to claim 103, US 6,198,168 discloses the wafer is adapted to be anodically etched to create the high aspect ratio hole (claim 8).

With regard to claims 104-105, 107-108, 116-117, and 119-120, US 6,198,168 does not disclose the layer of reflective material has a thickness of approximately 300 angstroms. However, US 6,198,168, modified by US 6,090,636 in claim 102 above, would disclose a layer of reflective material has a thickness of approximately 300 angstroms (col.3, lines 13-16). The reflective layer is substantially uniform (col. 6, lines 39-40).

With regard to claims 109, 112-114, and 125, in addition to the limitations disclosed in claim 102 above, US 6,198,168 also disclose:

- US 6,198,168 does not disclose the at least optical waveguide includes a diameter above a cut-off diameter for transmission of light waves. However, US 6,090,636 discloses a cut-off diameter for transmission of light waves (col. 4, lines 49-51). US 6,090,636 teaches the diameter of the high aspect ratio hole is determined by

the formula $D_0 = 0.59\lambda_0/n$ to yield a reasonable diameter (col. 4, lines 49-65).

Therefore, it would have been obvious for the one with ordinary skill in the art to modify US 6,198,168 with the teaching of US 6,090,636 to have a cut-off diameter in order to have a reasonable size. The cut-off diameter of the at least one optical waveguide is 6 microns (col. 4, line 64);

- The high aspect ratio hole includes a filling material (claim 8), but does not disclose the filling material has an index of refraction greater than 1.0. However, US 6,198,168, modified by US 6,090,636 in claim 102 above, would disclose the filling material has an index of refraction greater than 1.0 (col. 4, line 66 to col. 5, line 1).

With regard to claims 110-111 and 126-127, US 6,198,168, modified by US 6,090,636 in claim 109 above, would disclose the at least optical waveguide is at least three to ten times the cut-off diameter, which is determined by the formula in claim 109 above (col. 4, lines 53-56).

With regard to claim 118, in addition to the limitations disclosed in claim 102 above, US 6,198,168 also disclose:

- US 6,198,168 discloses a layer of aluminum formed by sputtering to line the inner surface of the high aspect ratio hole (claim 23), but does not disclose the lining is mirror like. However, US 6,090,636 discloses a metallic mirror lining the inner surface of the high aspect ratio hole (col. 4, lines 34-38). US 6,090,636 teaches the high aspect ratio hole is function as a waveguide and needs high reflectivity (col. 6, lines 36-64). Therefore, it would have been obvious at the time the invention was made to modify US 6,198,168 with the teaching of US 6,090,636 to

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provide a mirror like lining in the high aspect ratio hole in order to have high reflectivity.

With regard to claims 121 and 123, US 6,198,168, modified by US 6,090,636 in claim 102 above, would disclose a metallic mirror layer includes a layer of tungsten (col. 6, lines 42-43).

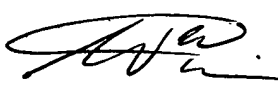
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wai-Sing Louie whose telephone number is (703) 305-0474. The examiner can normally be reached on 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on (703) 308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



LONG PHAM
PRIMARY EXAMINER



wsl
May 12, 2003